



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20230
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/578,962 | 05/25/2000 | Takashi Iwasaki | 6920/OH207 | 7076 |

7590

05/20/2002

Darby & Darby PC
805 Third Avenue
New York, NY 10022

EXAMINER

STOCK JR, GORDON J

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 05/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|-----------------|--|----------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 09/578,962 | | IWASAKI ET AL. | |
| | Examiner | | Art Unit | |
| | Gordon J Stock | | 2877 | |

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3,4</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Drawings

1. The drawings are objected to because reference number 11 of Fig. 2 does not reference an object of the Figure. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because on page 6, lines 28-33; page 7, line 1, the second embodiment is disclosed as having a slit to limit a width of optical rays input from a light source and limits a wavelength band width of the condensed rays. However, on lines 25-29 of page 9, the second embodiment is disclosed as having an output slit plate. It is unclear as to how many slits are in the second embodiment.

Clarification is required.

Claim Objections

3. **Claims 6-8 and 10** are objected to for the following. As to **claim 6**, the claim discloses a slit to limit a width of optical rays (line 8) and limits a wavelength bandwidth (line 16). The disclosure discloses a slit to limit a width of optical rays input from a light source and limits a wavelength bandwidth of the condensed rays (page 6, lines 28-33; page 7, line 1). However, on lines 25-29 of page 9, the second embodiment is disclosed as having an output slit plate. It is unclear as to how many slits are in the second embodiment.

Clarification is required.

Art Unit: 2877

As to **claims 7, 8, and 10**, these claims are objected to for being dependent upon an objected base claim. Subsequently, if claim 6 is clarified, claims 7, 8, and 10 will no longer be objectionable.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Minami (JP 08292096)** in view of **Rogers (6,118,583)**.

Minami discloses a monochromator comprising:

an optical ray input section that limits the width of optical rays input from a light source (Fig. 1, 3); a first concave mirror (Fig. 1, 4); a diffraction grating (Fig. 1, 5); a second mirror (Fig. 1, 6); an optical ray output section which limits a wavelength bandwidth of the condensed rays (Fig. 1, 7); a substrate to which the optical ray input section, the first concave mirror, the diffraction grating, the second concave mirror, and the optical ray output section are fixed (Fig. 1, 1).

Minami does not disclose the concave mirrors having coefficients of linear expansion being approximately the same as the coefficient of linear expansion of the substrate. However, Rogers teaches that the mirrors of the optical system together with the support structure be made of materials with the same coefficient of thermal expansion, in order for the optical system to be inherently athermalized (col. 2, lines 3-10). It would have been obvious to one skilled in the art

to have the coefficients of linear expansion of the mirrors' focal length approximately equal to the coefficient of linear expansion of the substrate, for it is well known in the art to have optical components and their supporting structures of an optical system have the same coefficient of thermal expansion, in order to have an inherently athermalized optical system.

As to **claim 2**, Minami discloses everything as above in view of Rogers (see **claim 1**). Minami does not disclose the absolute value of the difference between the coefficients of linear expansion of the material forming the substrate and the concave mirrors being the absolute value of $d/(4\alpha L\Delta T)$ or less. However, Rogers teaches that the mirrors of the optical system together with the support structure be made of materials with the same coefficient of thermal expansion, in order for the optical system to be inherently athermalized (col. 2, lines 3-10). It would be obvious to one skilled in the art that the absolute value of the difference between the coefficients of linear expansion of the material forming the substrate and the concave mirrors being the absolute value of $d/(4\alpha L\Delta T)$ or less. By having the mirrors and base plate made of materials with the same coefficient of thermal expansion, in order to have an athermal system, the absolute difference will be zero, the absolute value of $d/(4\alpha L\Delta T)$ or less.

As to **claim 3**, Minami discloses everything as above in view of Rogers (see **claim 1**). Minami does not disclose a difference between the coefficient of linear expansion of the material forming the substrate and the coefficients of linear expansion of the focal lengths of the first and second concave mirrors as being $10 \times 10^{-6}/\text{degrees Celsius}$ or less. However, Rogers teaches that the mirrors of the optical system together with the support structure be made of materials with the same coefficient of thermal expansion, in order for the optical system to be inherently athermalized (col. 2, lines 3-10). It would be obvious to one skilled in the art that the difference

between the coefficients of linear expansion is 10×10^{-6} /degrees Celsius or less. By having the mirrors and substrate made of materials with the same coefficient of thermal expansion, in order to have an athermal system, the coefficients of linear expansion are exactly the same for the base plate and the mirrors. Therefore, the difference will be zero, which is less than 10×10^{-6} /degrees Celsius.

As to **claim 4**, Minami discloses everything as above in view of Rogers (see **claim 1**) except for the material forming the substrate being a composite of aluminum and ceramic. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the material forming the substrate to be a composite of aluminum and ceramic, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of an obvious design choice. In re Leshin, 125 USPQ 416.

As to **claim 5**, Minami discloses everything as above in view of Rogers (see **claim 1**). In addition, Minami discloses at least one of the optical ray input section and the optical ray output section is a slit (Fig. 1, 3, 7).

As to **claim 6**, Minami discloses a monochromator that comprises:

a slit to limit a width of optical rays input (Fig. 1, 3); a concave mirror wherein the concave mirror condenses the diffracted rays (Fig. 1, 6); a diffraction grating (Fig. 1, 5); a substrate to which the slit, the concave mirror, and the grating are fixed (Fig. 1, 1); and an exit slit to limit the condensed rays (Fig. 1, 7).

However, Minami does not disclose the concave mirrors having coefficients of linear expansion being approximately the same as the coefficient of linear expansion of the substrate. However,

Rogers teaches that the mirrors of the optical system together with the support structure be made of materials with the same coefficient of thermal expansion, in order for the optical system to be inherently athermalized (col. 2, lines 3-10). It would have been obvious to one skilled in the art to have the coefficients of linear expansion of the mirrors' focal length approximately equal to the coefficient of linear expansion of the substrate, for it is well known in the art to have optical components and their supporting structures of an optical system have the same coefficient of thermal expansion, in order to have an inherently athermalized optical system.

As to **claim 7**, Minami discloses everything as above in view of Rogers (see **claim 6**). Minami does not disclose a difference between the coefficient of linear expansion of the material forming the substrate and the coefficients of linear expansion of the focal lengths of the first and second concave mirrors as being 10×10^{-6} /degrees Celsius or less. However, Rogers teaches that the mirrors of the optical system together with the support structure be made of materials with the same coefficient of thermal expansion, in order for the optical system to be inherently athermalized (col. 2, lines 3-10). It would be obvious to one skilled in the art that the difference between the coefficients of linear expansion is 10×10^{-6} / degrees Celsius or less. By having the mirrors and substrate made of materials with the same coefficient of thermal expansion, in order to have an athermal system, the coefficients of linear expansion are exactly the same for the base plate and the mirrors. Therefore, the difference will be zero, which is less than 10×10^{-6} /degrees Celsius.

As to **claim 8**, Minami discloses everything as above in view of Rogers (see **claim 6**) except for the material forming the substrate being a composite of aluminum and ceramic. It would have been obvious to one having ordinary skill in the art at the time the invention was

Art Unit: 2877

made to have the material forming the substrate to be a composite of aluminum and ceramic, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of an obvious design choice. In re Leshin, 125 USPQ 416.

As to **claim 9**, Minami discloses a spectroscope comprising the monochromator as according to claim 1 in view of Rogers (see **claim 1**).

As to **claim 10**, Minami discloses a spectroscope comprising the monochromator as according to claim 6 in view of Rogers (see **claim 6**).

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is:

(703) 308-7722

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Thursday, 7:30 a.m. - 6:00 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Application/Control Number: 09/578,962

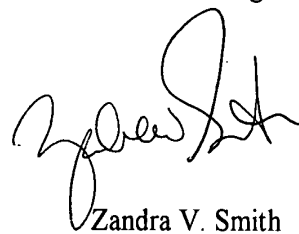
Art Unit: 2877

Page 8

DA

gs

May 16, 2002

A handwritten signature in black ink, appearing to read 'Zandra V. Smith', written in a cursive style.

Zandra V. Smith

Patent Examiner

Art Unit 2877